USA

INVESTOR IN PEOPLE

jc997 U.S. PTO
09/852630

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

# CERTIFIED COPY OF PRIORITY DOCUMENT

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

In accordance with the rules, the words "public limited company" may be replaced by p.l.c., plc, P.L.C. or PLC.

Re-registration under the Companies Act does not constitute a new legal entity but merely subjects the company to certain additional company law rules.

Signed J Evans.

Dated 16 March 2001

Patents Form 1/77

Patents Act 1977
(Rule 16)

The Patent Office

1/77

30MAY00 E540621-1 D02716
P01/7700 0.00-0012951.0

THE PATENT OFFICE
26 MAY 2000
RECEIVED BY HAND

# Request for grant of a patent

*(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)*

**The Patent Office**

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference

PAT 00028 GB

2. Patent application number
*(The Patent Office will fill in this part)*

0012951.0

26 MAY 2000

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

NOKIA MOBILE PHONES LIMITED
KEILALAHDENTIE 4
02150 ESPOO
FINLAND

Patents ADP number *(if you know it)*

74667470001

If the applicant is a corporate body, give the country/state of its incorporation

FINLAND

4. Title of the invention

RADIOTELEPHONE

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

NOKIA IPR DEPARTMENT
NOKIA HOUSE
SUMMIT AVENUE
FARNBOROUGH
HAMPSHIRE
GU140NG UK

Patents ADP number *(if you know it)*

7577638001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

| Country | Priority application number *(if you know it)* | Date of filing *(day / month / year)* |
|---|---|---|

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

| Number of earlier application | Date of filing *(day / month / year)* |
|---|---|

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'Yes' if:*

*a) any applicant named in part 3 is not an inventor, or*
*b) there is an inventor who is not named as an applicant, or*
*c) any named applicant is a corporate body.*
*See note (d))*

YES

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

| | |
|---|---|
| Continuation sheets of this form | |
| Description | 8 |
| Claim(s) | 3 |
| Abstract | 1 |
| Drawing(s) | 4 |

10. If you are also filing any of the following, state how many against each item.

| | |
|---|---|
| Priority documents | |
| Translations of priority documents | |
| Statement of inventorship and right to grant of a patent *(Patents Form 7/77)* | |
| Request for preliminary examination and search *(Patents Form 9/77)* | 1 |
| Request for substantive examination *(Patents Form 10/77)* | |
| Any other documents *(please specify)* | |

11. I/We request the grant of a patent on the basis of this application.

Signature Juliet Hibbert Date

JULIET HIBBERT 25 MAY 2000

12. Name and daytime telephone number of person to contact in the United Kingdom

Chris Harrison 01252 865037

**Warning**

*After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.*

**Notes**

*a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.*

*b) Write your answers in capital letters using black ink or you may type them.*

*c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.*

*d) If you have answered 'Yes' Patents Form 7/77 will need to be filed.*

*e) Once you have filled in the form you must remember to sign and date it.*

*f) For details of the fee and ways to pay please contact the Patent Office.*

# RADIOTELEPHONE

This invention relates to a radiotelephone, and in particular a removable housing for a radiotelephone.

It has become desirable for users of radiotelephones to replace a broken or scratched housing of a radiotelephone easily without requiring any special training or tools. Also, users of radiotelephones may want to change the appearance of their radiotelephone by replacing its housing with another of a different appearance.

Known removable front covers for radiotelephones have a latching element formed from the front cover moulding that engages with an aperture on a rear housing of the radiotelephone. The removal of this type of front cover is a two handed operation requiring a user to, first, use one hand to disengage the latching element from the rear housing aperture then, due to the frictional force that exists between the latching element and the rear housing, use a second hand to remove the front cover from the rear housing.

It is desirable to improve this situation.

According to an aspect of the present invention there is provided an electronic radiotelephone comprising a first and second housing for housing the electronic components of the radiotelephone; the first housing having an element with an operating surface and a formation arranged to co-operate with a complementary formation on the second housing for releasably attaching the first housing to the second housing; the element being movable between a first and a second position such that when the element is in the

first position the formation and complementary formation are arranged to co-operate to allow the first housing to be coupled to the second housing and when in the second position allow the second housing to be removed from the first housing; the element being resiliently biased into the first position and arranged to allow a user to urge the element, via the operating surface, into the second position during the removal of the second housing from the first housing, thereby allowing the second housing to be removed from the first housing without interference from the element.

This provides the advantage of allowing the second housing to be removed from the first housing without interference from the first housing, thereby allowing easy removal of the second housing from the first housing.

Preferably the first housing is presented away from a user during operation of the radiotelephone and the second housing is presented towards a user during operation of the radiotelephone.

Suitably the radiotelephone further comprises retaining means for retaining the electronic components of the radiotelephone to the first housing.

Preferably the element is a flexible hinge.

Most preferably the radiotelephone further comprises means for urging the second housing away from the first housing to aid the removal of the second housing from the first housing.

This allows the second housing to be moved away from the first housing on movement of the element from the first to the second position without requiring a user to handle the second housing. This allows the second

housing to be removed from the first housing in response to a single operation.

For a better understanding of the present invention and to understand how the same may be brought into effect reference will now be made, by way of example only, to accompanying drawings, in which:-

Figure 1 shows a radiotelephone according to an embodiment of the present invention;

Figure 2 shows an exploded view of the radiotelephone of figure 1;

Figure 3 shows a cross-section through part of the housing of figure 1;

Figure 4a shows a cross-section through a second part of the housing of figure 1 with the front and rear housings attached;

Figure 4b shows a cross-section through a second part of the housing of figure 1 with the front and rear housings detached.

Figure 1 shows a radiotelephone 1 having a shell shaped first housing 2, otherwise referred to as a front cover, having a front wall 3 integral with side walls 4; a second housing 5, otherwise referred to as a rear cover, having a rear wall 6 integral with side walls 7; and an inner housing 8. Sandwiched between the front cover 2 and inner housing 8 is a keymat 9. The inner housing 8 is coupled to the rear cover 5, as described below.

Figure 2 shows the mechanical structure of the radiotelephone 1. A keymat 9 is snapped on and off the inner side of the front cover 2. The main purpose of the keymat 9 is to act as an interface between the user and the functions of

the radiotelephone 1. The inner housing 8 comprises an inner cover 10, a main circuit board 11, a system connector 12, a dome sheet 13, a speaker 14, a microphone 16 and a liquid crystal display 15. The inner cover 10 is arranged to snap fit to the main circuit board 11. The main circuit board 11, which provides the main functionality of the radiotelephone 1, is coupled to the system connector 12, the dome sheet 13 which transforms the movement of the keys into an electrical connection on the circuit board 11, the speaker 14, the microphone 16 and the liquid crystal display 15.

An antenna 17 is coupled to the rear cover 5 via an aperture in the upper transverse sidewall 18. The rear wall 6 of rear cover 5 has a recess (not shown) for receiving a battery 19. The battery 19 provides the power required to operate the radiotelephone 1. A battery cover 20 is arranged to snap fit to the rear cover 5 to enclose the battery 19, as is well known to a person skilled in the art.

The inner housing 8 is attached to the rear cover 5 via attaching lugs 21 and lugs 22, which are arranged to snap fit into complementary apertures (not shown) on the rear cover 5 and into complementary recesses 23 on the rear cover 5 respectively. However, other attachment means may be used for coupling the inner housing 8 to the rear cover 5, for example screws, rivets.

The lower side-wall 24 of the rear cover 5, transverse to the longitudinal axis of the rear cover 5, has a cut away section for receiving the system connector 12.

On either side of the cut away of the side wall 24 are grooves 25 arranged for coupling the rear cover 5 to the front cover 2, as described below.

The upper side-wall 18 of the rear cover 5, transverse to the longitudinal axis of the rear cover 5, has a U shaped cut away for operation of a release element 26, otherwise known as a release button.

The release button 26 is a right angled shaped element made out of a resilient material, for example plastic. The release button 26, as shown in cross-section in figure 3, has a lower section 27 and an upper section 28. The lower section 27 is coupled to the rear wall 6 of the rear cover 5 via an attachment stud 29. The release button 26 can be attached to the rear wall 6 by any suitable means, for example welding, riveting. The release button is a flexible hinge, whereby the resilient material allows the upper section 28 to pivot relative to the lower section 27.

The upper section 28 of the release button 26 is biased against the upper wall 18 of the rear cover 5. The upper section 28 comprises an operating portion 30 and a latching portion 31. The operating portion 30 projects outwardly to form an extended surface. The extended surface extends into the U shaped cut away on the upper wall 18 of the rear cover 5. The extended surface allows a user to apply pressure, via a user's finger or thumb, to the release button 26, thereby allowing a user to urge the upper section 28 of the release button 26 away from the upper wall 18. The extended surface, otherwise known as operating surface, has, substantially, the same contour as the surrounding upper wall of the rear cover.

The latching portion 31 is formed above the operating portion 30, relative to the rear wall 6. The latching portion 31 forms a ridge that is arranged to engage with a complementary lip 32 on the front cover 2, as described below.

The front wall 3 of the front cover 2 has a plurality of apertures 33 through which components inside the housings partially project. The apertures 33 can

be provided for, for example, push button keys, a display device or a loudspeaker device/microphone device. The side-walls 4 are arranged to match the corresponding side walls 7 on the rear cover 5 when the rear and front covers are attached.

The lower end-wall 34, transverse to the longitudinal axis of the front cover, has a cut away section (not shown) for accommodating the upper part of the system connector 12. On either side of the cut away section, located on the inner side of the end wall 34, are attaching lugs (not shown) that co-operate with the corresponding grooves 25 on the rear cover 5 for coupling the first and rear covers, as described below.

The upper end-wall 36, transverse to the longitudinal axis of the front cover, has a U shaped cut away section 38 for accommodating the upper part of the operating surface of the release button 30. Located above the cut-away section, on the inner side of the end-wall 36 is a lip 32 that co-operates with the ridge on the latching portion 31 of the release button 26 for coupling the front and rear covers, as described below.

Figure 4a and 4b shows a modification to the above described radiotelephone in which a leaf spring 37 is coupled to the inside of the front wall 3 of the front cover 2. In addition, the leaf spring is located below a protective window 39, wherein the window 39is for viewing the display 15. The leaf spring 37 is arranged to be compressed by the inner housing 8 when the front and rear covers are attached, as shown in figure 4a. The leaf spring 37 provides spring bias between the front and rear covers. The spring bias between the front and rear covers is provided transverse to the longitudinal axis of the covers to allow the front cover 2 to be urged away from the rear cover 5 uniformly on a transverse plane, as shown in figure 4b. However, any type of spring may be used that urges the front cover away from the rear cover. Alternatively,

however, the spring may be coupled to either the rear cover or inner housing and arranged to urge the front cover away from the rear cover when the front and rear covers are attached.

To attach the front cover 2 to the rear cover 5 the lugs (not shown) on the lower wall 34 of the front cover 2 are brought into contact with the grooves 25 on the lower wall 24 of the rear cover 5, as shown in figure 1, thereby allowing the lugs to engage with grooves 25. The upper part of the front cover 2 is moved towards the upper part of the rear cover 5, as shown by direction A in figure 1, overcoming spring bias of spring 37 as spring 37 is urged against the inner housing 8. As the upper part of the front cover 2 is brought into contact with the upper part of the rear cover 5 the lip 32 is brought into contact with the latching portion 31 of the release button 26. The lip 32 and latching portion 32 of the release button 26 are arranged so that on urging the lip 32 and latching portion 31 together the lip 32 causes the release button 26 to be urged inwards, away from the upper side wall 18 of the rear cover 5, until the lip 32 enters the ridge on the latching portion 31 of the release button 26, thereby latching the front cover 2 to the rear cover 5. Alternatively, a user may urge the release button 26 away from the upper side wall 18 of the rear cover 5 while bringing the front and rear covers together, thereby coupling, on release of the release button 26, the front and rear covers.

To remove the front cover 2 from the rear cover 5 the release button 26 is urged away from the upper side wall 18 of the rear cover 5, typically using a user's finger or thumb, thereby releasing contact between the lip 32 and release button 26. The spring bias of spring 37 urges the upper portion of the front cover 2 away from the upper portion of the rear cover 5 to allow the front cover 2 to be removed from the rear cover 5.

The present invention may include any novel feature or combination of features disclosed herein either explicitly or implicitly or any generalisation thereof irrespective of whether or not it relates to the presently claimed invention or mitigates any or all of the problems addressed.

In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention. The applicant hereby gives notice that new claims may be formulated to such features during prosecution of this application or of any such further application derived therefrom. For example, it will be appreciated that the release button 26 may be formed from the rear cover 5 or a rubber seal may be used in place of a spring for urging the front cover away from the rear cover when the front and rear covers are attached, wherein the rubber seal may be coupled to either the front cover, the rear cover or the inner housing.

**CLAIMS**

1. An electronic radiotelephone comprising a first and second housing for housing the electronic components of the radiotelephone; the first housing having a element with an operating surface and a formation arranged to co-operate with a complementary formation on the second housing for releasably attaching the first housing to the second housing; the element being movable between a first and a second position such that when the element is in the first position the formation and complementary formation are arranged to co-operate to allow the first housing to be coupled to the second housing and when in the second position allow the second housing to be removed from the first housing; the element being resiliently biased into the first position and arranged to allow a user to urge the element, via the operating surface, into the second position during the removal of the second housing from the first housing, thereby allowing the second housing to be removed from the first housing without interference from the element.

2. A radiotelephone according to claim 1, wherein the first housing is presented away from a user during operation of the radiotelephone and the second housing is presented towards a user during operation of the radiotelephone.

3. A radiotelephone according to claim 1 or claim 2, further comprising retaining means for retaining the electronic components of the radiotelephone to the first housing.

4. A radiotelephone according to any preceding claim, wherein the second housing has a lip for engaging with the element to allow the first housing to be coupled to the second housing.

5. A radiotelephone according to any preceding claim, wherein the element is a flexible hinge.

6. A radiotelephone according to any preceding claim, wherein the first housing further comprises retaining means for retaining the electronic components of the radiotelephone to the second housing.

7. A radiotelephone according to any preceding claim, further comprising means for urging the second housing away from the first housing to aid the removal of the second housing from the first housing.

8. A radiotelephone according to claim 7, wherein the means for urging comprises a spring associated with the first housing and arranged to be compressed when the first and second housings are coupled.

9. A radiotelephone according to claim 7, wherein the means for urging comprises a spring associated with the second housing and arranged to be compressed when the first and second housings are coupled

10. A radiotelephone according to claim 7, wherein the means for urging comprises a rubber seal associated with the first housing and arranged to be compressed when the first and second housings are coupled.

11. A radiotelephone according to claim 7, wherein the means for urging comprises a rubber seal associated with the second housing and arranged to be compressed when the first and second housings are coupled.

12. A radiotelephone substantially as hereinbefore described with reference to the accompanying drawings, and/or as shown therein.

13. A housing substantially as hereinbefore described with reference to the accompanying drawings, and/or as shown therein.

**ABSTRACT**

RADIOTELEPHONE

An electronic radiotelephone comprising a first and second housing for housing the electronic components of the radiotelephone; the first housing having a element with an operating surface and a formation arranged to co-operate with a complementary formation on the second housing for releasably attaching the first housing to the second housing; the element being movable between a first and a second position such that when the element is in the first position the formation and complementary formation are arranged to co-operate to allow the first housing to be coupled to the second housing and when in the second position allow the second housing to be removed from the first housing; the element being resiliently biased into the first position and arranged to allow a user to urge the element, via the operating surface, into the second position during the removal of the second housing from the first housing, thereby allowing the second housing to be removed from the first housing without interference from the element.

(Figure 3)

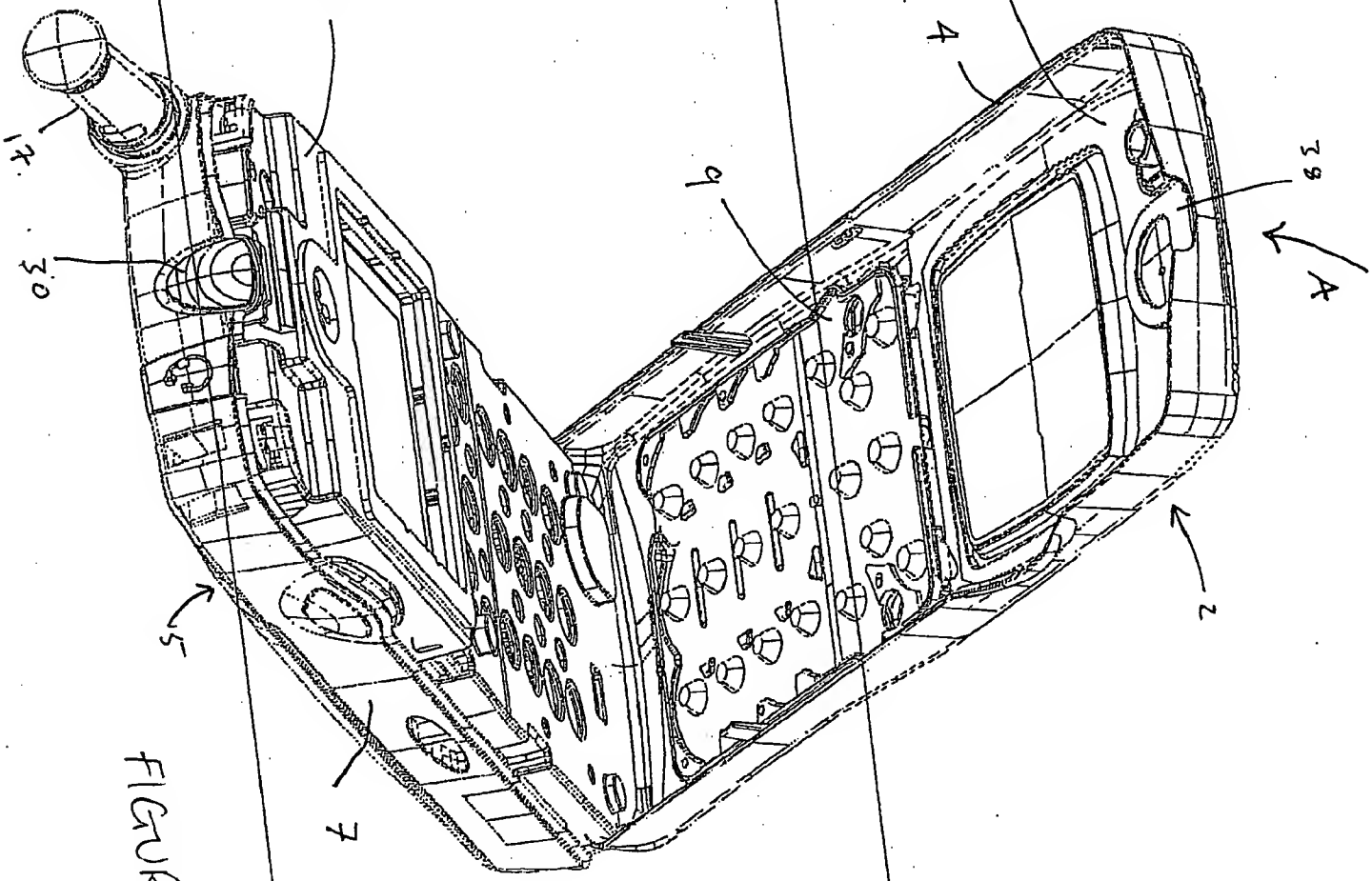


FIGURE 1

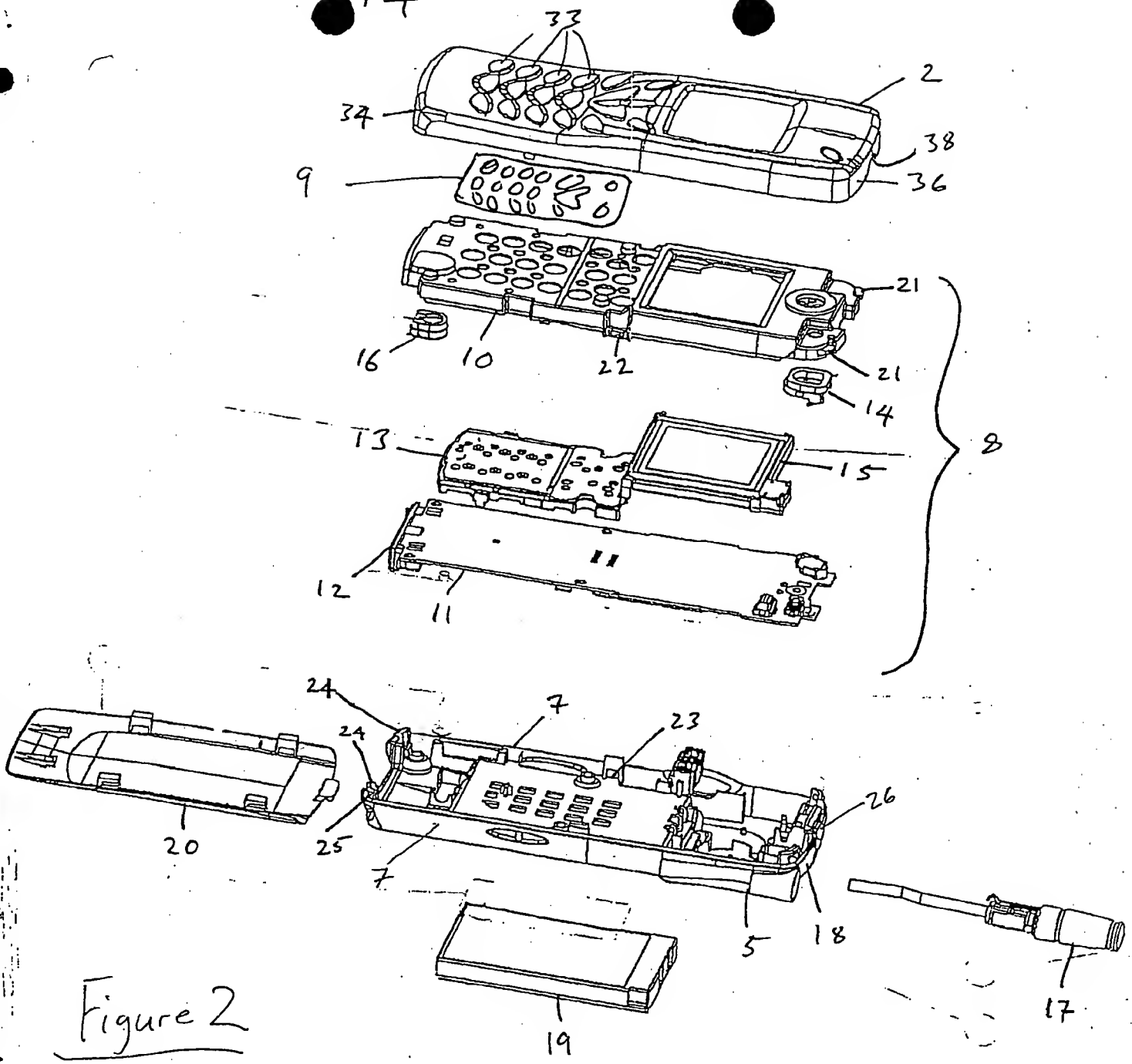


Figure 2

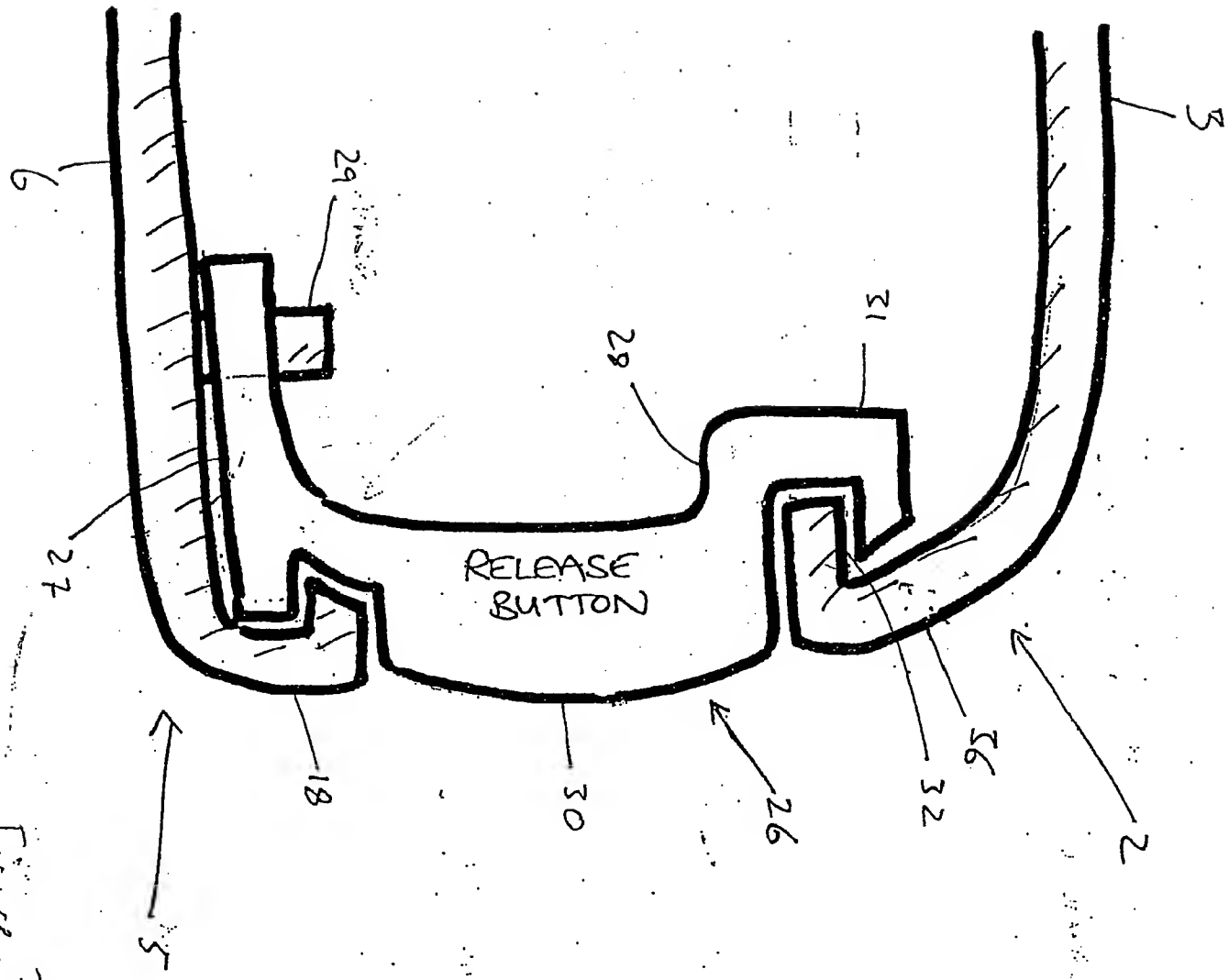


Figure 3

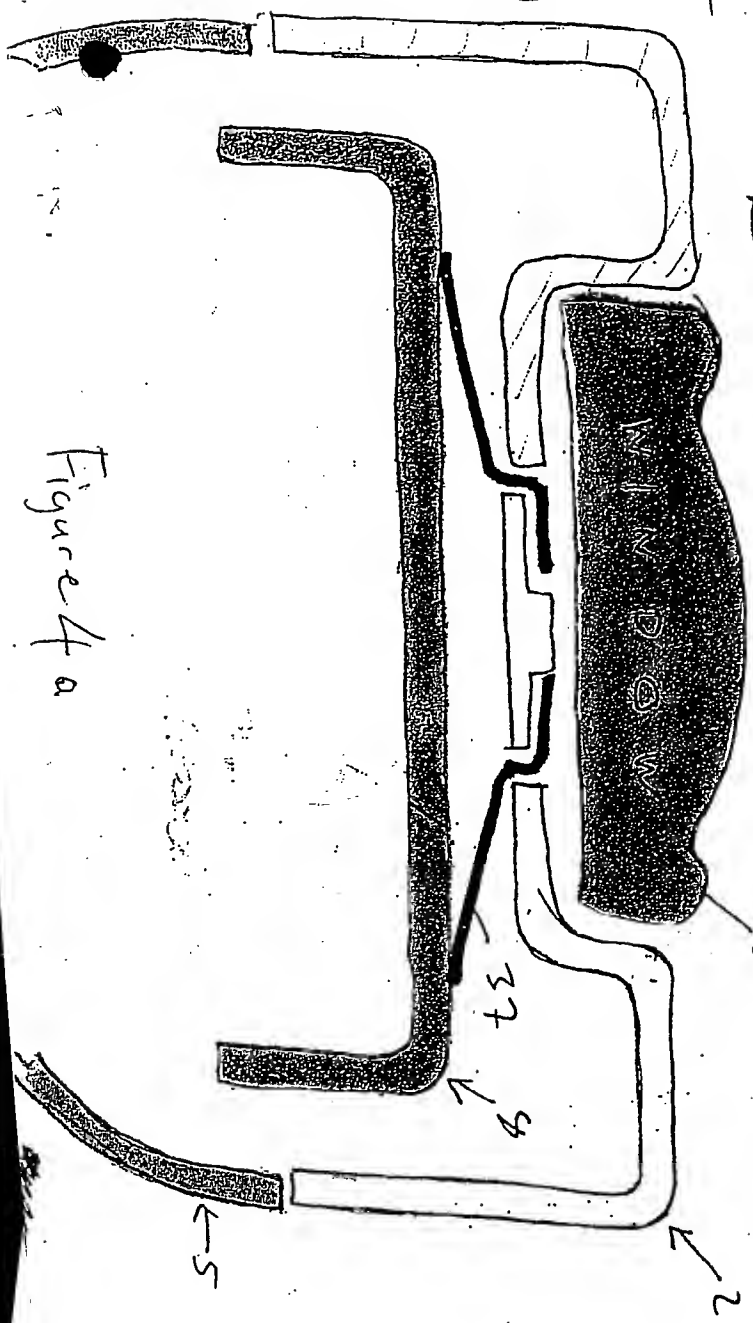


Figure 4a

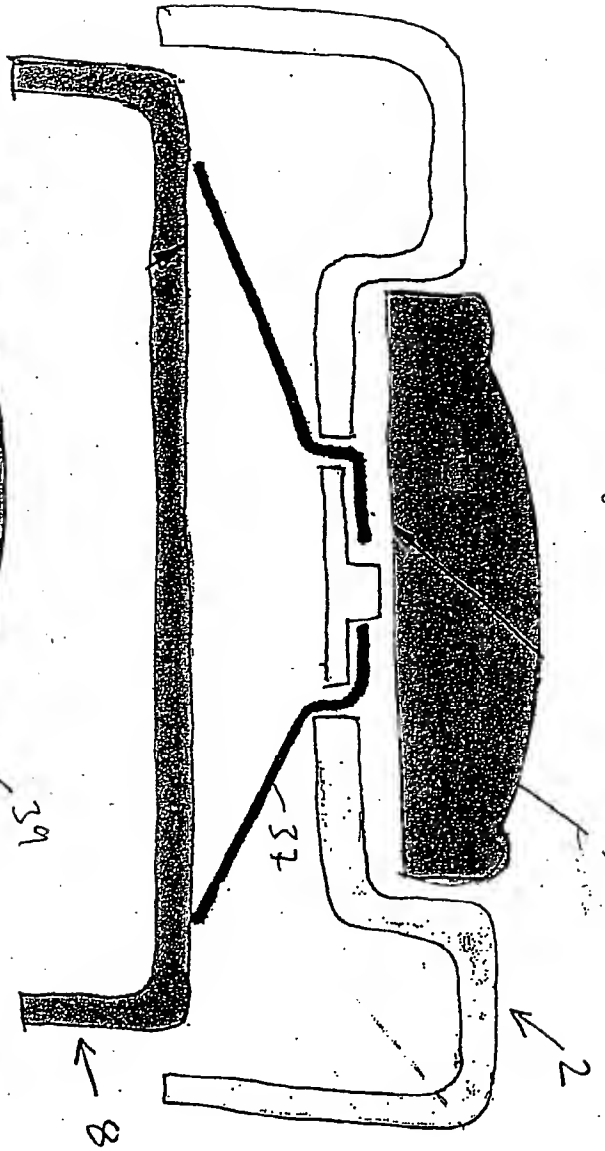


Figure 4b